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ABSTRACT

To deal with an increasing student withdrawal rate from courses, Fullerton College instituted a Skills Prerequisite System, involving mandatory assessment of learning skills in reading, writing, and mathematics followed by prescriptive mandatory placement in appropriate remedial instruction prior to ernollment in skill-dependent, entry-level courses. The system was designed to reduce the withdrawal rate by 5% to 10%, improve students' learning skills, and increase academic performance without lowering academic standards in transfer and vocational courses. The development of the system involved the identification of the basic skills required to succeed in entry-level courses; an experimental phase during which students were placed in 13 entry-level classes; and an analysis of the results of the experimental phase. The two-phase implementation process began with all entry-level courses in the transfer curriculum and then moved on to the vocational-technical curriculum. Implementation required a tripling of the testing assessment sessions to accommodate 9,000 students, increasing the number of reading class sections, and increasing the use of counselors. A 2-year follow-up study of the effectiveness of remediation for all 1982 students revealed significant improvements in grade point average when a poor reader or writer underwent remediation during the first semester of enrollment, and a decline in withdrawal rates from 38% in 1977 to 21% in 1983. The paper includes a cost analysis of the Skills Prerequisite System, highlighting the variety of instructional delivery systems used to provide remedial instruction, and providing definitions, course descriptions and information on assessment procedures. (HB)

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The Skills Prerequisite System Fullerton College Fullerton, California November, 1984 (A Six-year Investment in People)

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The Skills Prerequisite System
Fullerton College

(A Six-year Investment in People)

(What is it?)

DEFINITION AND ASSUMPTION: The Skills Prerequisite System at Fullerton College is a process of **mandatory assessment** of learning skills in reading, writing and mathematics fundamental to the learning process in the classroom. For students identified as having learning skills deficiencies, this is followed by prescriptive **mandatory placement** in appropriate remedial instruction prior to enrollment in skill dependent entry level courses in all transfer and non-transfer curricula. The system is predicated on the belief that students are more likely to persevere and succeed if they have the appropriate "tools for learning" at the collegiate level. When a student does not possess such "tools for learning," such as reading, writing and mathematics, the open door institution must provide opportunity for acquisition of such tools; only then can the institution have the "open door" rather than the "revolving door."

(Why and how?)

HISTORY: In 1977-78 we became deeply concerned about a progressive rise in the "drop" or "W" rate, which had reached an all time high of 38 percent, with a projected high of 45-50 percent in five years. As a response to this concern we launched a project called the Skills Prerequisite System to a) reduce the drop rate by 5-10 percent, b) improve student learning skills based on a diagnostic, prescriptive counseling, remediation program, and c) increase academic performance without lowering academic-instructional standards in both transfer and technical-vocational courses.

DEVELOPMENT:

PHASE I involved the identification of the basic reading, writing and math skills required to succeed in entry level courses (1978 and 1979).

PHASE II, the experimental phase, was begun in Fall 1980. Once we knew what levels of skill performance were required for a 50-50 chance for success, prerequisites, primarily reading, were placed on 13 experimental entry level courses by the instructors. Counselors began placing students in appropriate reading courses for remediation and in entry level courses which had been given a reading prerequisite.

In addition, the assessment of students required a computer scoring system which was developed and made operational. The system permits a computerized test report to be used during counseling and program advisement.

PHASE III involved analyzing the results of the experimental phase, using a before-after research design in which each course was its own "control" spanning the Fall Semesters and Spring Semesters for the years 1978-81. For the non-prerequisite courses the decline in the "W" rate was eight percent. The reduction of the "W" rate in the experimental courses was 25.9 percent.

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(Painful?)

DECISIONS-FULL IMPLEMENTATION: The most difficult question concerning the Skills Prerequisite System was "Shall we do it college wide?". A Skills Advisory Committee heard the evidence and recommended that the System be implemented in two phases for all entry level courses in all curricula:

1) **Phase** I for transfer curricula.

2) **Phase** II for vocational-technical curricula.

In both phases students were to be excluded from a course of study if their reading skills were **below** the equivalent of the 10th grade level and placed in a reading program to improve their reading skills. Following such instruction, students were to be mainstreamed into their chosen fields of study.

The recommendation was subsequently submitted for approval to the Faculty Senate and then to the Board of Trustees. Both approved the plan.

IMPLEMENTATION REQUIRED:

1) Tripling of the testing assessment sessions to accommodate 9,000 students.

2) Adding and modifying components of the reading program of instruction, including development of a 0-7th grade reading and writing program to be taught in Adult Education.

3) Increasing reading class sections by adding staff and facilities.

4) Increasing utilization of counselors in direct student consultation on their program of study.

5) Modifying placement in mathematics in three divisions - Technical Education, Mathematics and Engineering and Business Education.

6) Increasing writing awareness and expansion of class sections in writing skills.

7) Granting few exceptions to the mandatory assessment and placement counseling, e.g., AA, BA, or satisfactory proof of completion of a comparable course.

SKILLS OF STUDENTS:

Based on assessed skills of reading, writing, computation and algebra, the first time entry student population assessed during Fall/Spring 1982 and Fall 1983 were distributed as shown in Table I, page 3.

TABLE I

FULLERTON COLLEGE POPULATION
SKILLS IN WRITING, READING AND MATHEMATICS

		Fall/Spring 1982 (N = 8902)	Fall 1983 (N = 6753)
Writing Levels:		%	%
I	College Writing (100, 1A)	16	16
II	Pre-college Writing (60, Subj. A)	58	58
III	Writing fundamentals	26	26
Reading Levels:			
I	Clear for college level reading tasks and above. (142 Critical Reading)	53	53
II	In need of assistance. Concurrent enrollment in reading dependent classes allowed. (56B Reading Skills)	15	12
III	In need of major assistance. Cannot enroll in reading dependent classes. (56A Reading Skills)	24	28
IV	Seriously deficient. (Adult Basic Education)	08	07
Mathematics Levels:			
I	Intermediate Algebra	17	21
II	Elem. Algebra	44	39
III	Arithmetic	39	40

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DOES REMEDIATION WORK?

The question of the efficiency and efficacy of the Skills Prerequisite System at Fullerton is a critical one. A 2 year follow-up study of Fall, 1982 students was undertaken in the Fall of 1983 to answer this question, "Does Remediation Work?"

READING:

During the Fall of 1982, the enforcement of the reading prerequisite lead to a quasi experimental situation. Many students who should have been placed in a remediation reading course successfully avoided such placement. Consequently, they effectively created the necessary quasi control group to compare with the experimental group who received remediation.

In the analysis of the data the population was separated into three sub-groups: "poor readers" (0-45), "intermediate readers" (46-55), and "good readers" (55+). (See Table II, page 6)

The poor reader group was further sub-divided into an experimental group that received remediation and a control group that needed but did not receive remediation. These poor readers were then compared on three outcomes: 1) cumulative grade point average, 2) total units completed and 3) total units dropped for 3 semesters.

The results are shown in Table III and a significant difference was revealed on two of the three outcome variables. The cumulative grade point average over a three semester span of enrollment is significantly improved when a poor reader undergoes remediation in his first semester of enrollment. The mean for the remediated poor reader group was 1.83 cumulative grade point average, and the mean for the non-remediated poor reader was 1.60 cumulative grade point average. The remediated students completed an average of 16.56 units during the three semesters and dropped an average of 6.34 units, whereas the non-remediated students completed an average of 11.87 units and dropped an average of 5.43 units.

Moreover, as shown in Table II, intermediate readers who were not required to take reading courses achieved a mean cumulative grade point average of 1.70. (This intermediate reader group should have achieved higher cumulative grade point averages than the poor reader/remediated group.)

Additional analysis was completed on the poor reader group that received remediation. Those students who successfully completed the reading courses during their first semester Fall, 1982 with grades of "A", "B", and "C" were contrasted with those students who did not successfully complete the remediation experience and received "D", "F", "W", "I", or "NCR". Comparison of the two groups on the dependent outcome variables of cumulative grade point average for three semesters, units completed and units dropped is shown in Table IV. The successfully remediated students achieved a cumulative grade point average of 2.41 and completed 20.62 units; and the unsuccessfully remediated students achieved a cumulative grade point average of 1.65 and completed 8.20 units. Such a difference is indicative of the efficacy of ameliorating reading skills.

WRITING:

The quasi experimental design was used with the students who were poor writers. The results are shown in Table V for these students. Remediated poor writers who

were enrolled in English 51, 60 achieved a significantly higher cumulative grade point average than did the non-remediated poor writers. The mean cumulative grade point average for remediated writers was 2.01 and the mean cumulative grade point average was 1.53 for the non-remediated poor writers. The remediated group completed an average of 20.28 units over the three semester period whereas the non-remediated poor writer completed an average of 8.06 units.

ETHNIC ORIGIN:

Another issue was a major concern. Does the Skills Prerequisite System as implemented generate inequalities for given ethnic groups? The data shown in Table V indicate that Asian (includes large Vietnamese population), Hispanic and White Caucasians are over represented in the group of students receiving remediation.

CONCLUSION:

Such results clearly suggest that if a student receives remedial assistance via formal instruction in both reading and writing skills during their first semester of enrollment in a community college, the student will more likely achieve at a higher level and will complete more actual college work successfully.

(Where are we now?)

OUTCOME:

1) Our "W" rate has been reversed dramatically declining from 38 percent in 1977, to 21 percent in 1983! We have a 79 percent completion rate as of Fall 1983.

2) Students are receiving more adequate remediation in the basic learning tools of reading, writing and mathematics.

3) Students upon entry are receiving more intensive and prescriptive assistance with their program planning from counselors.

4) We have increased our cost "up front"; but, decreased our cost and waste of human potential "out-back".

5) We have increased the probability of improved achievement of the poor reader and the poor writer who receives remediation in reading and writing. Those who ameliorate their skills in reading and writing achieve significantly higher cumulative grade point averages and complete more units of academic study.

TABLE II

COMPARISON OF GOOD, INTERMEDIATE, AND POOR READERS ON 3 OUTCOME VARIABLES

	N	CUMULATIVE GPA 3 Semesters $\bar{X}_1$	TOTAL UNITS COMPLETED 3 Semesters $\bar{X}_2$	TOTAL UNITS DROPPED 3 Semesters $\bar{X}_3$
Good Reader	154	2.32	18.57	6.25
Intermediate Reader	174	1.70	15.10	6.86
Poor Reader	481	1.73	14.53	5.93
Total	809			

Oneway analysis of variance

1 F 16.294 P>.00001
2 F 4.994 P>.0070
3 F 1.590 P>.20

TABLE III

COMPARISON OF REMEDIATED AND NON-REMEDIATED POOR READERS ON 3 OUTCOME VARIABLES

	N	CUMULATIVE GPA 3 Semesters $\bar{X}_4$	TOTAL UNITS COMPLETED 3 Semesters $\bar{X}_5$	TOTAL UNITS DROPPED 3 Semesters $\bar{X}_6$
Poor Reader (Experimental) Remediated	271	1.83	16.56	6.34
(Control) Non-Remediated	210	1.60	11.87	5.43
Total	481			

Oneway analysis of variance

4 F 4.469 P>.03
5 F 14.790 P>.0001
6 F 3.298 P>.07

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TABLE IV

ONEWAY ANALYSIS OF VARIANCE OF SUCCESSFULLY AND UNSUCCESSFULLY REMEDIATED POOR READERS ON GRADE POINT AVERAGE AND TOTAL UNITS COMPLETED FOR 3 SEMESTERS

Poor readers	CUMULATIVE GPA 3 SEMESTERS		TOTAL UNITS COMPLETED 3 SEMESTERS	
	$\bar{X}$	F,P	$\bar{X}$	F,P
Successfully Remediated	2.41	50.767	20.62	101.653
Unsuccessfully Remediated	1.65	P>.0000	8.20	P>.0000
Total	2.07		15.11	

TABLE V

COMPARISON OF REMEDIATED AND NON-REMEDIATED POOR WRITERS ON 3 OUTCOME VARIABLES

	CUMULATIVE GPA 3 Semesters		TOTAL UNITS COMPLETED 3 Semesters	TOTAL UNITS DROPPED 3 Semesters
	N	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$
Poor Writer (Experimental) Remediated	408	2.01	20.28	6.65
(Control) Non-Remediated	339	1.53	8.06	5.48
TOTAL	747			

Oneway analysis of variance

1 F 30.617 P>.00000
2 F 182.694 P>.00000
3 F 7.699 P>.0057

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TABLE VI

PERCENTAGES OF KNOWN ETHNIC ORIGIN
OF REMEDIATED STUDENTS, ASSESSED STUDENTS
AND TOTAL POPULATION OF FULLERTON COLLEGE, FALL 1982

Self Reported Ethnic Origin	Remediated Students % of Known Ethnic Origin	Assessed Students % of known Ethnic Origin	Total Student Population % of Known Ethnic Origin
American Indian	0.86	0.36	1.04
Asian	9.48	12.36	7.13
Black	0.86	2.54	2.19
Filipino	0.00	0.00	0.53
Hispanic	13.36	14.90	10.05
White Caucasian	75.86	69.81	75.84

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